In the Specification

[0010] Fig, 3 is a further exemplary embodiment of a rudder control of fig. 2.

[0013] Fig. 2 is a perspective view of an embodiment in which biometric readers in the form of fingerprint and retina readers 119 and 121, respectively, are associated with the rudder control 112, i.e., the controller, of an aircraft. In one preferred embodiment, the fingerprint reader 119 is of a type that also incorporates a pulse sensor. In the embodiment shown, the fingerprint/pulse reader 119 may be provided on one or both of the rudder control arms 122a and 122b. The retina reader 121 is shown provided centrally disposed between the two upright rudder control arms 122a/122b. As should be understood, the fingerprint/pulse reader 119 and retina reader 121 may be utilized at other desired locations as well, such as the fingerprint/pulse reader 119 being associated with other components or the retina reader 121 mounted at other locations in the cockpit. The fingerprint/pulse reader 119 and retina reader 121 may be conventional devices, such as any commercially available components, or may be specially manufactured hardware and/or software where desired. Alternatively, as should be understood, other types of biometric sensors may be utilized where desired. In fig. 3 is illustrated another exemplary embodiment of a rudder control 312. In this embodiment, the fingerprint/pulse reader 319 comprises a series of four inward radius portions 330 shaped to accommodate a user's fingers and a thumb reader 332. The remaining portions are the same as that illustrated in fig. 2. As should be understood, the rudder control may comprise other shapes and configurations as well, and should not be construed as being limited to the designs shown in figs. 2 and 3; for example, a single straight arm, circular steering wheel type design, T-shaped, etc.

[0015] As discussed above, the monitoring system 116 is also preferably in communication with one or more control mechanisms 118 on the aircraft, such as, for example,

the rudder control 112, any system controlled by the rudder control 112, the auto pilot control system, a Global Positioning System ("GPS"), such as a GPS chip, located on the aircraft and/or integrated within one or more biometric sensors, or any conventional systems on the aircraft, as examples. The monitoring system 116 may comprise the aircraft's existing on board computer system or may comprise a separate computer system located on the aircraft itself or at designated locations outside of the aircraft, such as an air traffic control center, which is in communication with the on board computer system or directly with the aircraft's security devices 114 and/or control mechanisms 118.

[0018] As shown at step 214, the pilot is required to hold the rudder control 112, so that the pilot's fingerprint/pulse can be detected by the fingerprint/pulse reader 119 and communicated to the monitoring system 116 to verify identity. An authorized pilot will be able to fly the aircraft, as shown at step 216. Otherwise, as shown at step 218, the rudder control 112 will not function properly and the individual will not be able to fly the plane; for example, in one embodiment, the monitoring system 116 will kick back to auto-pilot mode, as shown at step 220. The term "fly" as used herein should be broadly construed to refer to any phase of an aircraft flight, starting up of the aircraft, movement of the aircraft from a fixed position, take-off or landing of the aircraft, taxiing of the aircraft as well as in the air flight. Accordingly, in other exemplary embodiments, where the aircraft is on the ground, for instance, the monitoring system 116 may operate to prohibit takeoff where an unauthorized pilot is detected, for example, by failing to turn on engines, locking of the rudder control 112, etc. Further, where an unauthorized person may place their hand on the rudder control 112 in order to try to fly the airplane, the monitoring system 116 may also communicate that information to designated authorities, such as, for example, via an unauthorized pilot notification or a disaster alert signal sent to ground

control, as shown at step 222. The monitoring system 116 may also at the same time send the unauthorized person's biometric data to designated authorities, as shown at step 224, so that a subsequent biometric check may be performed to uncover the identity of that individual. In this embodiment, the pulse sensor of the fingerprint/pulse reader 119 operates to detect further information about the condition of the individual holding the rudder control 112, such as whether or not there is the presence of a pulse, to signify that the hand placed on the rudder control is of a live individual, or if there is a rapid or irregular pulse, such as to signify that the individual is in a distressed state. The monitoring system 116 can be programmed to notify authorities, such as ground control, if any such unusual pulse reading occurs, such as, for example, via a distressed pilot notification or a disaster alert, as shown at step 226.

[0021] As should be understood, the embodiments discussed above can be susceptible to many different modifications or variations. For example, it should be understood that any number of security devices may be used in connection with embodiments of the present invention, and with any number being biometric readers. For instance, in the illustrated embodiment, one or more biometric readers may be utilized where desired, and the biometric readers may be of any desired type, such as a fingerprint/pulse reader and/or retina reader as shown or any other desired types of biometric reading devices. In addition, in certain embodiments, it may be desired that there be a combination of biometric and nonbiometric type security devices, or that no biometric type security devices be used. In addition, the term "controller" as used herein should be broadly construed to comprise any suitable type of device, system or method for regulating operation, such as a rudder control of any desired shape, as mentioned above, a keyboard, trigger, buttons, tracking ball, single or dual joystick, lever, wheel, etc. Further, while the illustrated embodiment is described in relation to aircraft, it should be

understood that embodiments may also comprise other types of apparatus or systems as well, including vehicles, such as, for example, military vehicles, commercial vehicles (e.g., trains, buses, trucks, taxi cabs, etc), private vehicles (e.g. passenger cars), or any desired products or equipment, such as controls for nuclear reactors or military weapons, computer terminals, firearms, etc. The embodiments of the present invention may be implemented using hardware or software or any combination of the two where desired. Various embodiments may also be implemented using commercially available technology. Accordingly, it is intended that the invention not be limited to the specific illustrative embodiments, but be interpreted within the full spirit and scope of the appended claims and their equivalents.